Small Business Innovation Research/Small Business Tech Transfer

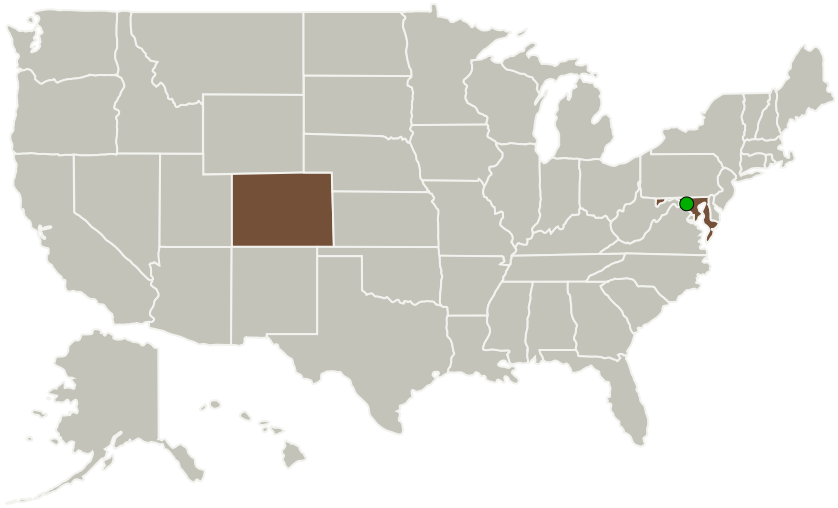
High Speed Compressor for Subcooling Propellants, Phase I

Completed Technology Project (2013 - 2013)

Project Introduction

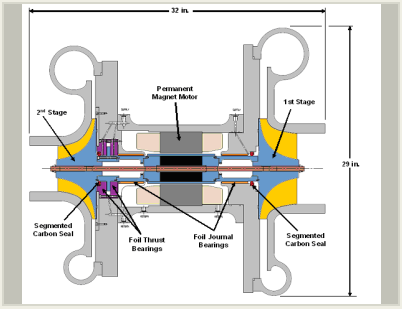
Propellant densification systems for LH2 require compression systems that develop significant head. In the past this has required multiple stages of compressors running at high speed on grease-packed ball bearings with very limited life, large heat leak and questionable rotordynamic stability. This project will utilize foil bearings with an innovative feature that will greatly increase bearing life/rotordynamic stability, drastically reduce number of stages and cost while increasing efficiency.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Barber-Nichols, Inc.	Lead Organization	Industry	Arvada, Colorado
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations	
Colorado	Maryland



High Speed Compressor for Subcooling Propellants

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Completed Technology Project (2013 - 2013)

Project Transitions

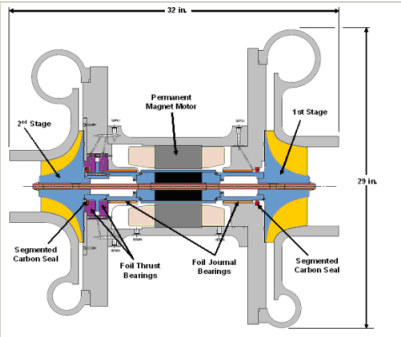
May 2013: Project Start

November 2013: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140391)*

Images



Project Image
High Speed Compressor for Subcooling Propellants
(https://techport.nasa.gov/image/132133)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Barber-Nichols, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

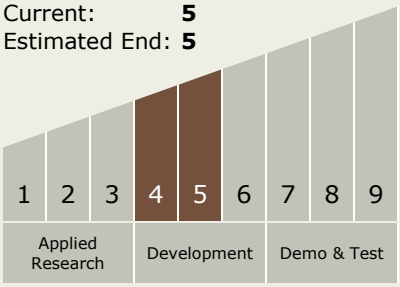
Carlos Torrez

Principal Investigator:

Jason L Preuss

Technology Maturity (TRL)

Start: **4**
Current: **5**
Estimated End: **5**



High Speed Compressor for Subcooling Propellants, Phase I

Completed Technology Project (2013 - 2013)

Technology Areas

Primary:

- TX14 Thermal Management Systems
  - TX14.1 Cryogenic Systems
    - TX14.1.4 Ground Testing & Operations

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System